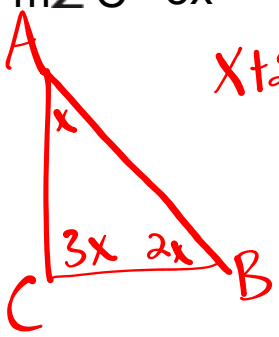
Warm Up

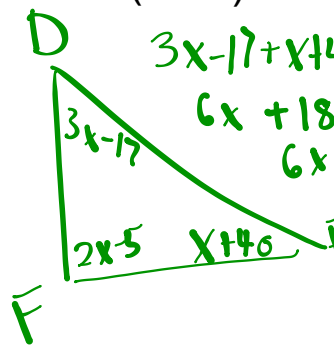
The variable expressions represent angle measures of a triangle. Draw a triangle and label the angles. Solve for x and determine value of each angle.

1. $m\angle A = x^\circ$
   $m\angle B = 2x^\circ$
   $m\angle C = 3x^\circ$



$x + 2x + 3x = 180$
$6x = 180$
$x = 30^\circ$

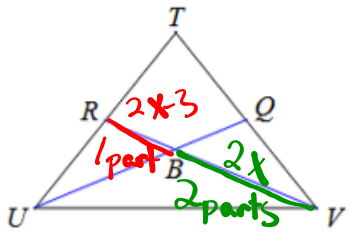
2. $m\angle D = (3x-17)^\circ$
   $m\angle E = (x+40)^\circ$
   $m\angle F = (2x-5)^\circ$



$3x-17+x+40+2x-5=180$
$6x+18=180$
$6x=162$
$x=27$

Review Of Centroid

17) Find x if $VB = 2x$ and $BR = 2x - 3$



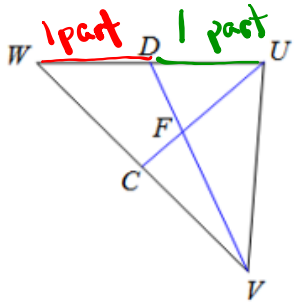
$2(2x-3) = 2x$

$4x-6 = 2x$

$-6 = -2x$

$x = 3$

19) Find x if $DW = 2x$ and $DU = 3x - 2$



$2x = 3x-2$

$-3x \quad -3x$

$-x = -2$

$x = 2$

Standards

CO.10 Prove theorems about and classify triangles. Theorems include:

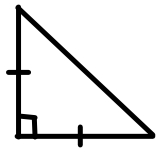
- measures of interior angles of a triangle sum to 180 degrees;
- base angles of isosceles triangles are congruent;
- Exterior Angle Theorem
- the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length;
- the medians of a triangle meet at a point.

SRT.4 Prove theorems about triangles. Theorems include:

- a line parallel to one side of a triangle divides the other two proportionally

Review so far

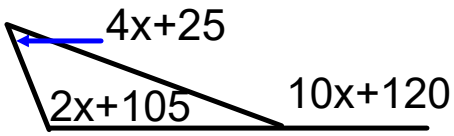
1. Classify the following triangle by angles and sides.



Right

Isosceles

2. Determine the value of x.



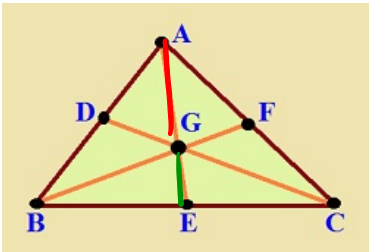
$4x+25+2x+105 = 10x+120$

$6x+130 = 10x+120$

$\frac{10}{4} = \frac{4x}{4}$

$x = 2.5$

3. Determine the length of AE.



$m\overline{AG} = 10x$ (2 parts)

$m\overline{GE} = 2x+9$ (1 part)

$2(2x+9) = 10x$

$4x+18 = 10x$

$18 = 6x$

$x = 3$

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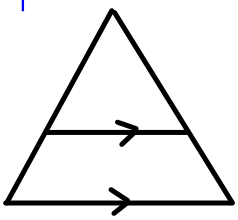
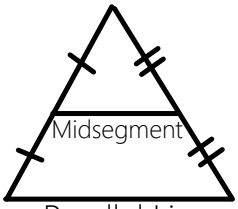
FOLDABLE

Triangle Theorems

Triangle Proportionality Theorem:



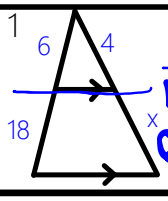
Triangle Midsegment Theorem:



On the Inside

Triangle Proportionality Theorem: A line parallel to one side of a triangle divides the other two proportionally, (and its converse).

Ex. 1

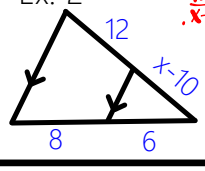


$\frac{6}{18} = \frac{4}{x}$

$6x = 72$

$x = 12$

Ex. 2



$\frac{12}{x-10} = \frac{8}{6}$

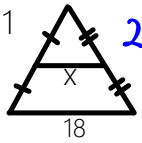
$8(x-10) = 72$

$8x - 80 = 72$

$8x = 152$

$x = 19$

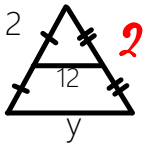
Ex. 1



$2(x) = 18$

$x = 9$

Ex. 2



$2(12) = y$

$24 = y$

Midsegment of a Triangle :

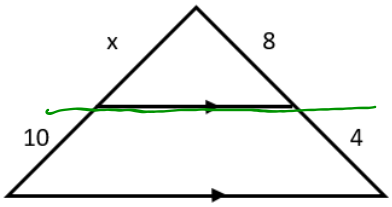
1. Parallel to one side
2. Midsegment is 1/2 the length of the parallel side
3. Midsegment contacts the midpoints.

Equation: midsegment = 1/2(parallel side)

or

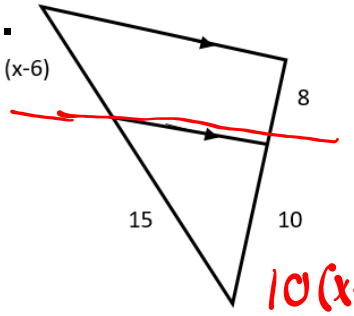
2(midsegment) = parallel side

1



$\frac{x}{10} \times \frac{8}{4}$ $4x = 80$ $x = 20$

2.



$\frac{x-6}{15} \times \frac{8}{10}$

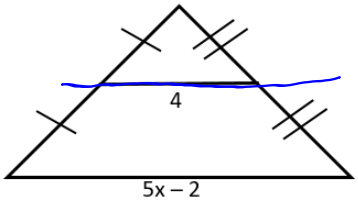
$10(x-6) = 120$

$10x - 60 = 120$

$10x = 180$

$x = 18$

3. Solve for x Mid segment



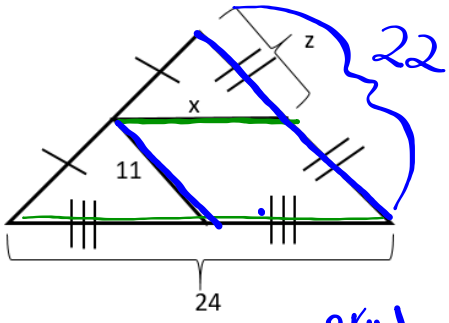
$2(4) = 5x - 2$

$8 = 5x - 2$

$10 = 5x$

$2 = x$

4. Solve for the missing variables.



$2(x) = 24$

$x = 12$

$2(11) = 22$

$z = \frac{22}{2}$

$z = 11$

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